STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL
Department of Enterprise Services
1500 Jefferson • P.O. Box 41449 • Olympia, Washington 98504-1449
(360) 407-9280 • fax (360) 586-5366 • e-mail sbcc@ga.wa.gov • www.ga.wa.gov/sbcc

Energy Code Technical Advisory Group
Meeting Review Notes for April 19, 2012

Agenda Items	TAG Actions
1. Welcome and Introductions	Meeting called to order at 9:05 am.
TAG Members Present: Louis Starr (A), Chair Pro Tem; Dave Baylon; Duane Bjornson; Jim Edelson (A); Patrick Hayes; John Hogan; Kristian Kicinski; Javad Maadanian; Chuck Murray; Gary Nordeen Robby Oylear; Steve Wilcox; Scott Williams ***13 Members Present (Counting 2 alternates)*** **Visitors Present**: Eric Vander Mey, Mike Kennedy, Oyvind Naess, Chris Quill Lisa Rosenow **TAG Members Absent**: Duane Jonlin, Sakhawat Amin, Joe Bettridge, Ric Cochran, Tom Cross, Jim Degnan, Kim Drury*, Gary Heikkinen, Duane Lewellen, John Miller, Darrick Philp; Doug Powell, Stan Price, Dan Steinert, Treasa Sweek* ***13 Members Absent (*Sent alternates)*** Staff: Krista Braaksma	
2. Review and Approve Agenda	No Quorum Present
3. Review and Approve Minutes	No Quorum Present
4. Review Tabled Proposals for Commercial Envelope and Total Building Performance Provisions	
E56 Tables C402.1.2, C402.2 Gen. Envelope (John Hogan) AM	Item was tabled at previous meeting to allow Patrick Hayes to review the impact on existing projects. Patrick Hayes moved to **recommend approval as modified**. Robby Oylear seconded the motion. **Comments:** Patrick reported that his calculations showed about a 5.87 percent increase over the existing code. John Hogan stated his source showed a national average over all building types of about 2 percent. Patrick noted it would be difficult for wood frame to comply with the amount of rigid needed for 0.051; can reach 0.054 with intermediate framing in highrise residential. **Motion carried**, 6 to 3.
Modification: In Walls category of Tables C402.1.2, C402.2, the values for Wood Framed and Other were changes to 0.054 and R-21 Intermediate Framing, respectively, for Climate Zone 5 and Marine 4. The rest remained as proposed.	
E116 C407.5.1 Mass walls (Patrick Hayes) D	Item was tabled at previous meeting to allow Patrick Hayes to provide some calculations on what 60% of the slab edge would represent. He reported it would be about 4.5 percent. Robby Oylear moved to **recommend approval as modified**. He proposed adding a column to the envelope tables specifically for "Peripheral Edges of

	Concrete Floors." Patrick Hayes seconded the motion. **Comments:** Dave Baylon felt this proposal would be a major step backwards. The **motion failed** 2 to 7. John Hogan moved to **recommend disapproval**. Chuck Murray seconded the motion.. **Comments:** Patrick Hayes asked if the TAG would favor a different percentage and they discussed options. **The motion carried** 5 to 1
E149 C402.1 Component Performance option (Robby Oylear) AM	Item was tabled at previous meeting to make modifications for consistency with IECC terms and requirements. Chuck Murray moved to **recommend approval as modified**. **Modification** Patrick Hayes seconded the motion. **Comments:** There was TAG debate on whether to include this option or assume that PNNL would have a customized Washington version of COM*check* available. Gary Nordeen said PNNL stated they would begin as soon as Washington adopted numbers. Chuck recommended going ahead with the proposal; the Council can always amend it out in November. The **motion carried** 7 to 3.
5. Review Proposals regarding Commercial Mechanical Provisions	
E68 C403.2.3 HVAC efficiency tables (John Hogan) AS	Chuck Murray moved to **recommend approval as submitted**. Robby Oylear seconded the motion. **Comments:** John Hogan noted ASHRAE efficiency tables for computer room equipment and for VRF systems were missing from the code. **Motion carried** 9 to 0.
E109 C403.2.3, Table C403.2.3(3) HVAC efficiency (Mike Kennedy) AM	John Hogan moved to **recommend approval as modified**. Chuck Murray seconded the motion. **Comments:** Mike Kennedy noted the PTHP and PTAC efficiencies in the IECC were not consistent with ASHRAE. He did recommend striking footnote c in Table C403.2.3(3), which inadvertently duplicated information already in the notes for the table. **Motion carried** 9 to 0.

Footnotes to **TABLE C403.2.3(3)** were modified as follows:
"Cap" = The rated cooling capacity of the ~~project~~ product in Btu/h. If the unit's capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculations.

a. Chapter 6 of the referenced standard contains a complete specification of the referenced test procedure, including the referenced year version of the test procedure.

b. Replacement unit shall be factory labeled as follows: "MANUFACTURED FOR REPLACEMENT APPLICATIONS ONLY: NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." Replacement efficiencies apply only to units with existing sleeves less than 16 inches (406 mm) in height and less than 42 inches (1067 mm) in width.

~~c. *Cap* means the rated cooling capacity of the product in Btu/h. If the unit's capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.~~

The rest remained as proposed.

E110 C403.2.3, Table C403.2.3(6) HVAC efficiency (Mike Kennedy) AS	John Hogan moved to recommend **approval as submitted**. Chuck Murray seconded the motion. **Comments**: Mike Kennedy stated the IECC provided redundant listings for condensing units, with inconsistent values. The **motion carried** 10 to 0.
E160 C403.2.6 Energy recovery ventilation systems (Robby Oylear) AS	Robby Oylear moved to **recommend approval as submitted**. Patrick Hayes seconded the motion. **Comments:** Robby noted this was essentially a clarification of ERV systems, targeting big box stores and providing an exemption for residential. **The motion carried** 6 to 0.
E131 C403.2.6 Drain water heat recovery (Duane Jonlin) Tabled	In Duane's absence, the TAG voted to Table the proposal.
E124 C403.2.6.1 Energy recovery ventilation systems (Mike Kennedy) AM	Robby Oylear moved to **recommend approval**. Gary Nordeen seconded the motion. **Comments:** Robby advocated a modification to strike the last portion of exception 8, as it didn't provide any additional clarification. Steve Wilcox had some questions regarding how it would be enforced. Kristian Kicinski was concerned that "cold deck" was not defined and advocated tabling the issue to come back with a definition. Robby Oylear moved to **modify the proposal** as noted below. Gary Nordeen seconded the motion. **Motion to modify carried** 3 to 0. The original motion also carried, 3 to 1.
8. Multi-zone systems with cold deck supply air and zone reheat ~~Cooling only air handling units or air conditioning units~~ where the minimum outdoor air is less than 70% of total supply air ~~at design heating conditions~~.	
E69 C403.2.6.1 Energy recovery ventilation systems (John Hogan) D	Robby Oylear moved to **recommend approval** as submitted. Javad Maadanian seconded the motion. **Comments:** John Hogan noted this proposal deletes exception 8, which was previously modified. Mike Kennedy stated this proposal more closely mirrors what was in the WSEC, but was concerned the 30% value in the table would impact some schools. The **motion to approve failed** 3 to 4. Chuck Murray moved to **recommend disapproval**. Dave Baylon seconded the motion. The **motion carried** 4 to 2.
E39 C403.2.4.3 Thermostat controls (Eric Vander Mey) AM	John Hogan moved to **recommend approval**. Robby Oylear seconded the motion. **Comments**: Eric Vander Mey stated the proposal contains changes made to thermostatic controls in the WSEC that did not appear in the mash-up. Gary Nordeen moved to recommend a **modification** to exempt ductless heat pumps. Chuck Murray seconded the motion. **The motion carried** 7 to 0. The modified original motion carried 9 to 0.

C403.2.4.8 Group R-2 and R-3 dwelling units. The primary space conditioning system within each sleeping unit shall be provided with at least one programmable thermostat for the regulation of space temperature… (portions not shown remain unchanged from proposed)

Exceptions:

3. Ductless heat pumps.

C403.2.4.9 Group R-2 sleeping units. (portions not shown remain unchanged from proposed)

Exceptions:

4. Ductless heat pumps.

The rest remains as proposed.

E37 C402.4.5.2, C403.2.4.4 Air dampers (Eric Vander Mey) Tabled	Robby Oylear moved to **recommend approval** as submitted. Javad Maadanian seconded the motion. **Comments:** Eric noted this was a correlation issue with the mechanical code. John felt this would introduce a conflict; and why does only Group R need to comply with the mechanical code. Kristian Kicinski moved to **recommend a modification**. Dave Baylon seconded the motion. Upon further discussion, the **TAG tabled the proposal** to come up with alternate language after lunch.
E159 C403.2.5 Ventilation (Robby Oylear) D	Robby Oylear moved to **recommend approval**. Gary Nordeen seconded the motion. **Comments**: John questioned the need to oversize systems, and how this would be enforced. The **motion failed** 0 to 9. Chuck Murray **moved for disapproval**. Dave Baylon seconded the motion. The **motion carried** 9 to 0.
E34 C403.2.5.1 Kitchen hood (Eric Vander Mey) D	Robby Oylear moved to **recommend approval**. Chuck Murray seconded the motion. **Comments:** Eric said he felt this was a loophole in the code. The TAG debated what the actual intent of the language was and if this would require two sources of makeup air. The **motion failed** 1 to 6. John Hogan moved to **recommend disapproval**. Gary Nordeen seconded the motion. The **motion carried** 7 to 1.
E38 C403.2.3 HVAC performance (Eric Vander Mey) AM	John Hogan moved to **recommend approval**. Dave Baylon seconded the motion. **Comments**: Eric noted this was language from the 2009 WSEC. After discussion, the TAG felt it would be simpler and cleaner to specify the efficiency be certified and listed. There was some concern about where multiple programs exist and whether this would require multiple listings, but it was felt "an approved" would clearly only require one. Kristian Kicinski moved to **recommend the noted modification**. John Hogan seconded the motion. The **motions carried** 7 to 0.

C403.2.3 HVAC equipment performance requirements. Equipment shall meet the minimum efficiency requirements of Tables C403.2.3(1), C403.2.3(2), C403.2.3(3), C403.2.3(4), C403.2.3(5), C403.2.3(6), C403.2.3(7) and C403.2.3(8) when tested and rated in accordance with the applicable test procedure. Plate-type liquid-to-liquid heat exchangers shall meet the minimum requirements of Table C403.2.3(9). The efficiency shall be verified through certification and *listed* under an *approved* certification program or, if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. ~~If a nationally recognized certification program exists for a product covered in C403.2.3(1), C403.2.3(2), C403.2.3(3), C403.2.3(4), C403.2.3(5),~~

~~C403.2.3(6), C403.2.3(7) and C403.2.3(8), and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be listed in the certification program. If there are multiple nationally recognized certification programs for a product then the product shall be listed in at least one of the certification programs.~~ Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrates that the combined efficiency of the specified components meets the requirements herein.

E158 ~~Table C403.2.3 HVAC efficiency tables (Robby Oylear)~~	This proposal was withdrawn by the proponent.
E70 C403.2.10 Fan motors (John Hogan) AS	Dave Baylon moved to **recommend approval as submitted**. Robby Oylear seconded the motion. **Comments:** Louis Starr asked what the cost estimate would be for the change. John Hogan stated the cost would go up approximately $10. Steve Wilcox asked how this would benefit enforcement. John replied that all motors would need to be ECM. The **motion carried** 5 to 0.
E168 C403.2.10.1 Fan power limitation (Scott Rushing) D	John Hogan moved to **recommend disapproval**. Dave Baylon seconded the motion. **Comments:** Robby stated this would allow you to get some benefits from series fan-powered boxes by allowing a different CFMs calculation when you use a different supply air to room air temperature difference, thus moving less air. John felt the code should stay with the 90.1 language. The **motion carried** 5 to 1.
E169 C403.2.10.2 Motor nameplate HP (Scott Rushing) AM	Robby Oylear moved to **recommend approval**. Javad Maadanian seconded the motion. **Comments**: Kristian asked if "life safety" was a defined term. Dave Baylon asked what systems wouldn't be considered life safety. Kristian Kicinski **moved a modification** to the language, adding "approved" and "such as smoke evacuation" as noted below. Dave Baylon seconded the motion. The modification **passed** 6 to 0; the main motion passed 5 to 2.

C403.2.10.2 Motor nameplate horsepower. For each fan, the selected fan motor shall be no larger than the first available motor size greater than the brake horsepower (bhp). The fan brake horsepower (bhp) shall be indicated on the design documents to allow for compliance verification by the *code official*.

Exceptions:

1. For fans less than 6 bhp (4413 W), where the first available motor larger than the brake horsepower has a nameplate rating within 50 percent of the bhp, selection of the next larger nameplate motor size is allowed.
2. For fans 6 bhp (4413 W) and larger, where the first available motor larger than the bhp has a nameplate rating within 30 percent of the bhp, selection of the next larger nameplate motor size is allowed.
3. For fans used only in *approved* life safety applications such as smoke evacuation.

E46 C403.2.12.2 Large volume fan systems (Leslie Jonsson) Tabled	As the proponent was not notified this was on the agenda, the TAG tabled the proposal after a short discussion.

E125 C403.2.12.2 Large volume fan systems (Mike Kennedy) AM	Chuck Murray moved **to recommend approval as modified**. Kristian Kicinski seconded the motion. **Comments**: Mike noted the next version of ASHRAE would be more aggressive than this requirement. Chuck noted the code would go into effect after the stated date, so should be amended out. Mike noted most manufacturers offer this as an option. **Motion carried** 8 to 0.

C403.2.12.2 Large Volume Fan Systems: Single or multiple fan systems serving a zone or adjacent zones without separating walls with total air flow over 10,000 cfm (3,540 L/s) are required to reduce airflow based on space thermostat heating and cooling demand. A variable speed drive shall reduce airflow to a maximum 75% of peak airflow or minimum ventilation air requirement as required by Section 403 of the *International Mechanical Code*, whichever is greater.

Exceptions:

1. Systems where the function of the supply air is for purposes other than temperature control, such as maintaining specific humidity levels or supplying an exhaust system.
2. Dedicated outdoor air supply unit(s) with heat recovery where airflow is equal to the minimum ventilation requirements and other fans cycle off unless heating or cooling is required.
3. An area served by multiple units where designated ventilation units have 50% or less of total area airflow and nonventilation unit fans cycle off when heating or cooling is not required.

~~Effective January 1, 2012,~~ All air-conditioning equipment and air-handling units with direct expansion cooling and a cooling capacity at AHRI conditions greater than or equal to 110,000 Btu/h that serve single zones shall have their supply fans controlled by two-speed motors or variable speed drives. At cooling demands less than or equal to 50%, the supply fan controls shall be able to reduce the airflow to no greater than the larger of the following:

1. Two-thirds of the full fan speed, or
2. The volume of outdoor air required to meet the ventilation requirements of Section 403 of the *International Mechanical Code*.

E161 C403.3.1 Economizers (Robby Oylear) AS	Robby Oylear moved to recommend approval as submitted. Gary Nordeen seconded the motion. Comments: Robby stated this expanded Exception 3 to allow all residential systems. John didn't feel it was appropriate to add IEER; AHRI calculates efficiency at full capacity. Robby stated VRF was the most efficient system in our climate. Motion carried 4 to 1.
E71 C403.4.1 Economizer exceptions (John Hogan) AM Modification	Robby Oylear moved for disapproval, but did not get a second. John **moved for approval**. Kristian Kicinski seconded the motion. **Comments:** John did not feel it was appropriate to add exceptions to the complex systems path. Eric suggested adding the exceptions from ASHRAE. He felt there should be some exceptions because there were limitations placed on the simple systems path. Chuck noted there could be issues with existing buildings as well. The TAG went through and discussed each exception. Robby Oylear **moved to modify**: retain exceptions 2, 5, 6, 7 and 8 and delete 1, 3, and 4. Javad Maadanian seconded the motion. The **motion carried** 6 to 1. Main motion carried 8 to 0.
E36 C404.2 Service water heating (Eric Vander Mey) AM	Robby moved to **recommend approval as modified**. John Hogan seconded the motion. **Comments:** This is very similar to E38 and should be addressed the same way. The **motion carried** 7 to 0.

C404.2 Service water-heating equipment performance efficiency. Water-heating equipment and hot water storage tanks shall meet the requirements of Table C404.2. The efficiency shall be verified through ~~data furnished by the manufacturer or through~~ certification and *listed* under an *approved* certification program, or if no certification program exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. ~~If a nationally recognized certification program exists for a product covered in Table C404.2, and it includes provisions for verification and challenge of equipment efficiency ratings, then the product shall be listed in the certification program. If there are multiple nationally recognized certification programs for a product then the product shall be listed in at least one of the certification programs.~~

E132 C405.10 Escalators & moving walks (Duane Jonlin) Tabled	In Duane's absence, the TAG voted to Table the proposal.
E148 C403.2.4.1.1 Heat pumps (Nathan Miller) AM	Robby Oylear moved to **recommend approval**. Javad Maadanian seconded the motion. **Comments**: Robby noted as currently written, no heat pumps would meet this requirement. John suggested using ASHRAE language instead. Robby offered alternative language as noted below. Robby Oylear **moved to modify** the proposal as noted. John Hogan seconded the motion. The **motion to modify and the main motion carried,** 6 to 0.

C403.2.4.1.1 Heat pump supplementary heat. ~~Heat pumps having supplementary electric resistance heat shall have controls that, except during defrost, prevent supplementary heat operation where the heat pump can meet the heating load.~~ Unitary air cooled heat pumps shall include microprocessor controls that minimize supplemental heat usage during start-up, set-up, and defrost conditions. These controls shall anticipate need for heat and use compression heating as the first stage of heat. Controls shall indicate when supplemental heating is being used through visual means (e.g., LED indicators). Heat pumps equipped with supplementary heaters shall be installed with controls that prevent supplemental heater operation above 40°F.

~~Exception: Packaged Terminal Heat Pumps (PTHPs) of less than 2-tons (24,000 BTU/hr) cooling capcity. Heat pumps whose minimum *efficiency* is regulated by NAECA and whose HSPF rating both meets the requirements shown in Table 403.2.3(2) and includes all usage of internal *electric resistance* heating are exempted from the *control* requirements of this section.~~

Exception: Packaged Terminal Heat Pumps (PTHPs) of less than 2-tons (24,000 BTU/hr) cooling capacity provided with controls that prevent supplementary heater operation above 40°F.

6. Other Business	None addressed.
7. Adjourn	The meeting was adjourned at 2:50 p.m.